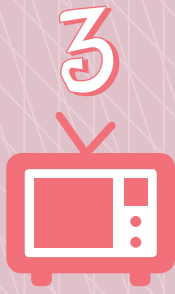


Chapter



Drawing and Painting using Adobe Photoshop

Adobe Photoshop is a computer application software used to edit and manipulate digital images. It helps in creating and manipulating documents and files using various elements, such as panels, bars and windows. An arrangement of these elements is called a 'workspace'. On starting an Adobe Creative Suite component, the default workspace is seen, which can be customised for the tasks to be performed there. For instance, you can create one workspace for editing and another for viewing, save them and switch between them as you work. You can restore the default workspace at any time by choosing the default option on the 'Window > Workspace' menu.

Texture painting tools are a means of adding the final finishing details. The brushes are intuitive, customisable and have the potential for producing realistic 3D models. Even the default brush sets included in the software package offer a variety of high-quality textures. These tools work together and allow one to paint textures directly from an external image onto one's model.

The 'Tool' panel (called the 'tool palette' in Photoshop) contains tools for creating and editing images, artwork, page elements, and so on. Related tools are grouped together.

NOTES

The 'Control' panel (called the 'option bar' in Photoshop) displays options for the currently selected tool.

On starting Photoshop, the 'tool palette' appears on the left of the screen. Some tools in the palette have options that appear in the context-sensitive option bar. These include tools that one can use for typing, selecting, painting, drawing, sampling, editing, moving, annotating and viewing images. Other tools allow one to change the foreground and background colours, go to Adobe online and work in different modes.

Digital painting is a way of creating an art object digitally. It is a technique for making digital art on computer. It refers to a computer graphics software that uses a virtual canvas and a virtual painting box of brushes, colours and other supplies. The virtual box contains many instruments that do not exist outside the computer, and give a digital artwork a different look and feel from an artwork that is made using the traditional way.

SESSION 1: INTRODUCTION TO ADOBE PHOTOSHOP

Adobe Photoshop can be used to create images from editing and manipulation of the existing images. Photoshop skills are useful and can help in doing jobs related to animation. The common features of the Adobe Photoshop are workspace, layers, smart objects, blend modes, selection techniques, filters and many other necessary features that you would be using.

When you first open Photoshop, you have a blank working space with various menus. Let us now look at some of the important features of an Adobe Photoshop that you can use to edit the image.

- **Menu bar** (seen horizontally at the top of the screen) shows the File, Edit, Image, Save as and other menus that give you access to a variety of commands, adjustments, and panels.
- **Options bar** (underneath the menu bar) displays options for the tool you are currently working with.
- **Tools panel** (on the left of the screen) contains tools for editing images and creating artwork. You can access related tools in a group by clicking and holding a tool in the panel.



- **Panels** (on the right) include Colour, Layers, Properties, and other panels that contain a variety of controls for working with images.
- **Document window** (in the middle) displays the file you are currently working on.

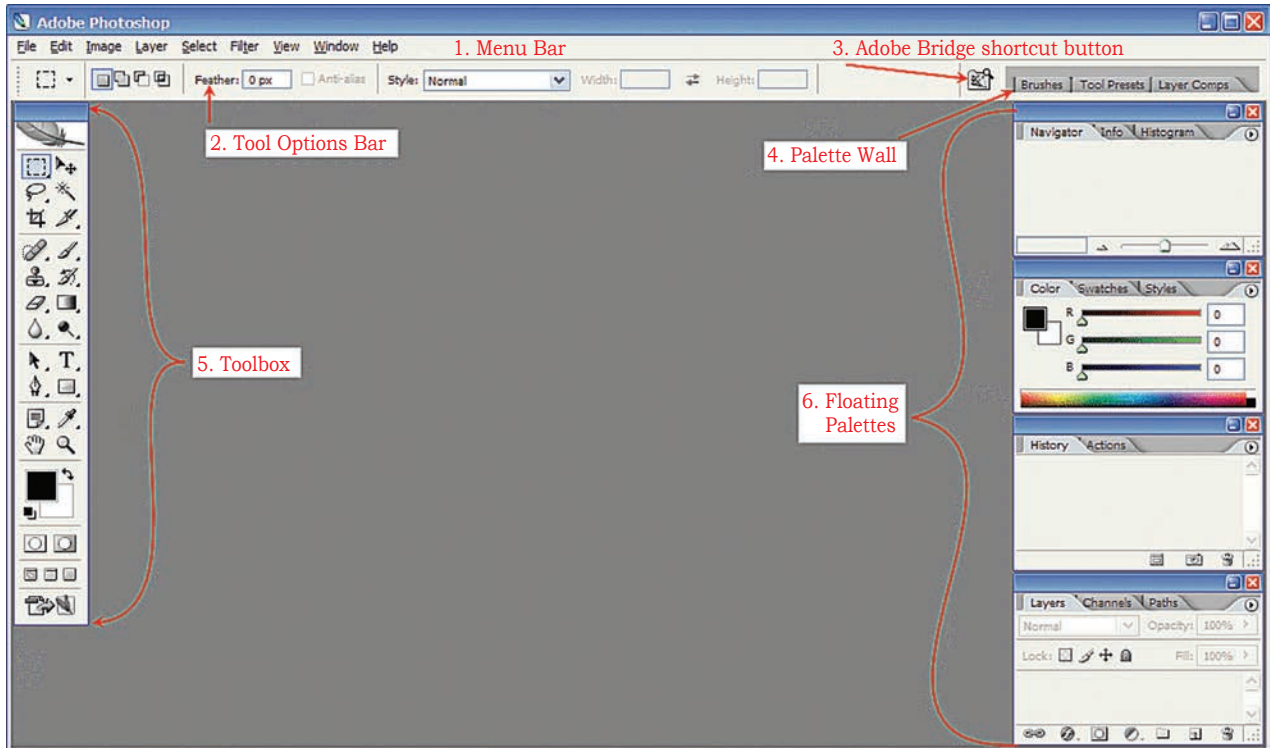


Fig. 3.1: Features of Adobe Photoshop

Open Images or Create New Images

Once the programme starts, one needs to open an existing file or create a new file in order to create an image. This can be done by clicking at the menu bar and selecting New option or pressing Control key and N together.

In the menu bar, choose File > Open to open an existing image.

In the menu bar, choose File > New to create a new image.

Saving a File

You can save your image in Photoshop (.psd) format. Saving in JPEG (.jpg) or PNG (.png) format will save it as a standard image file that can be shared and opened by other programmes.

NOTES

Save image: Choose **File > Save** or **File > Save As**.

Close image: Choose **File > Close**.

Choose Dimension

One of the several options available is for setting the dimensions of one's canvas or work area. You can use preset size (such as 8.5"×11", A-4 size), custom size (using the height and width controls), or clipboard option (which will set the canvas size to the default dimension stored in one's computer).

Choose Resolution

One may want to set a resolution for an image, based on how one intends to use it. The resolution determines how many pixels will be in one square inch of the image. The more the number of pixels in an inch, the more detailed the image will be.

A higher number of pixels per inch will result in a larger image and file size. Larger files will require larger amount of memory to process the data or image. These files will also take longer time to upload or download.

The standard resolution for websites is about 72 pixels per inch, while the standard print resolution is about 300 pixels per inch. One can set the resolution the way one wants but the user must be aware that using a resolution less than 300 for print will make an image look less sharp and blurred. Using a resolution above 72 pixels per inch on the web will make the image take longer to upload or download.

Choose Colour Mode

Depending on the type of output media (print, display or electronic media), the colour mode of an image will need to be changed. This determines how the colours will be calculated and displayed. This is a setting which can be changed after the image has been created.

You have already learnt that RGB is the mostly used colour mode. It is appropriate for images that will be viewed on computer. Since it uses 8 Bits channel individually to store the colour value associated with



every pixel, an RGB image is a 24 Bits image, i.e., $8 \text{ Bits} \times 3 \text{ channels (of RGB)} = 24 \text{ Bits image}$.

CMYK is another common colour mode. It is best used for images that will be printed as this mode is used by printers to render colours to images. Since it uses 8 Bits channel individually to store the colour value associated with every pixel, a CMYK image is a 32 Bits image, i.e., $8 \text{ Bits} \times 4 \text{ channel (of CMYK)} = 32 \text{ Bits image}$.

An exception to this is colour printing from a digital printing lab (photo printing lab). This printing machine works on the RGB mode. Hence, to take colour print from a digital photo lab, we need to create our graphics in RGB mode only. A colour laser printer, offset printing machine and flex printing machine prints in the CMYK colour mode.

Grayscale is the third most common option. Grayscale images range from black to white with many shades of grey in between. It is useful only for creating images which will be printed in the grayscale. It uses only two colours — black and white. A bit is basically a binary on-off switch. And each bit in binary is analogous to a ‘stop’ when we talk about light measure. Each stop of light you add to your scene doubles the amount of light, and so with each bit you add to a number you get twice the total number of potential values. 1 bit is 2 values, and is pure black and white, 2 bit is 4 values; black, white and a couple of shades of grey, 3 bit is 8 values, 4 bit is 16, and so on. By the time we reach 8-bit, we have 256 values ($2^8 = 256$) i.e., shades of grey colour ranging from black to white.

With any colour mode, the higher the number of bits, the more is the number of colour shades that will be displayed. Bit depth or colour depth specifies how much colour information is available for each pixel in an image. With high colour depth or colour bit, we get more visually appealing features like gradient and transparencies. Increasing the bits will also increase the file size. Therefore, use a higher number of bits only



when necessary. Table 3.1 shows the number of colours or colour shades available and their common names.

Table 3.1

Bit Colour	No. of colours	Resolution or Common Name for Video Display Mode
1	2	Monochrome
2	4	Colour Graphics Adapter (CGA)
4	16	Enhanced Graphics Adapter (EGA)
8	256	Video Graphics Array (VGA)
16	65,536	Extended Graphics Array XGA, high colour
24	16,777,216	Super VGA (SVGA, true colour)
32	16,777,216 + transparency	Red, Green, Blue, Alpha (RGBA)
48	281 trillion	

Choose Background

Start with a transparent background, as it will make it easier to achieve most effects. Create every other image on a separate layer above the background.

Practical Exercises

Activity 1

Understanding the size of RGB image in Adobe Photoshop

Material required

Computer, Adobe Photoshop software

Procedure

- Create digital graphics in Adobe Photoshop by opening a canvas of 1024×768 pixels; resolution: 150 pixels per inch; Colour mode: RGB.
- Import three images from 'clipart' gallery and mix these images and create a JPG file. View the file size in Windows Explorer.
- Write down the file size of this RGB graphics file with JPG file format in Kilo Byte (KB) or Mega Byte (MB).

Activity 2

Understanding the size of CMYK image in Adobe Photoshop

Material required

Computer, Adobe Photoshop software



Procedure

- Create digital graphics in Adobe Photoshop by opening a canvas of 1024×768 pixels; resolution: 150 pixels per inch; Colour mode: CMYK.
- Import three images from 'clipart' gallery, and mix these images and create a JPG file.
- View the file size in Windows Explorer.
- Write down the file size of this CMYK graphics file with JPG file format in Kilo Byte (KB) or Mega Byte (MB).
- Which file do you find larger— RGB Mode graphics file or CMYK mode graphics file?

(Note: The CMYK mode graphics file will be larger in size as compared to RGB mode file as CMYK is a 32 Bits image with 4 colour channels of 8 Bits each ($4 \times 8 \text{ Bits} = 32 \text{ Bits image}$), while the RGB mode graphics file is a 24 Bits image with 3 colour channels of 8 Bits each ($3 \times 8 \text{ Bits} = 24 \text{ Bits image}$).

Check Your Progress

A. Match the Columns

Column A	Column B
1. 24 Bits image	(a) RGB
2. 32 Bits image	(b) True colour
3. 24 Bits colour	(c) High colour
4. 16 Bits colour	(d) CMYK

What have you learnt?

On the completion of this Session, you will be able to:

- demonstrate the basic knowledge of the application of software for creating images.
- open a new file in Adobe Photoshop.
- choose dimension, resolution, colour mode and background in Adobe Photoshop.

SESSION 2: DRAWING AND PAINTING TOOLS

Adobe Photoshop provides tools for painting and editing the image colour. The Brush tool and the Pencil tool works like traditional drawing tools applying colour with brush strokes. The Brush tool supports a number of different brush tips that you can choose from the Tool Options panel. Eraser tool, Blur tool, and Smudge tool modify the existing colours in the image.

When you start Photoshop, the Toolbar, or the Tools panel appears on the left of the screen.

Toolbar

The Toolbar (also known as the Toolbox or the Tools panel) is the place which holds tools for making selection, cropping an image, editing and retouching, and much more. Let us now learn about the uses and applications of some of the tools.

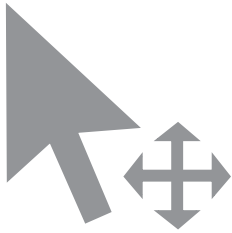


Fig. 3.2: Icon for Move tool

Move tool (Keyboard: V)

The move tool lets the user move objects in a given layer around the Photoshop canvas. To use it, click anywhere on the canvas and drag. As you drag, the layer will move with the mouse. The move tool icon is shown in Figure 3.2.



Fig. 3.3: Icons for marquee

Marquee (Keyboard: M)

Marquee lets the user select a part of the canvas in a specific shape. By default, one gets a rectangular or a perfect square shape, if one presses Shift key while selecting. However, one can also select in the shape of an ellipse or a circle pressing the Shift key while selecting. The icons used for marquee are shown in Figure 3.3.

Lasso (Keyboard: L)

Lasso is a free-form selection tool that lets the user drag around the canvas and select anything the lasso area covers. By this tool, one can have access to polygonal and magnetic lasso. Polygonal lasso lets the user select by clicking around on the canvas and creating points, while magnetic lasso works the same way as the regular lasso, but it tries to detect edges for the user and automatically snaps to them. The icon for lasso is shown in Figure 3.4.

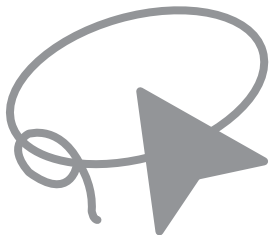


Fig. 3.4: Icon for Lasso



Magic wand (Keyboard: W)

The magic wand tool allows you to select an area of an image based on its colour. This tool can be used to remove backgrounds from photos. The icon for magic wand is shown in Figure 3.5.

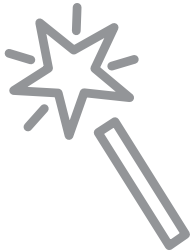


Fig. 3.5: Icon for magic wand

Crop tool (Keyboard: C)

The crop tool is used to crop pictures. You can specify the exact size and constrain the crop tool to those proportions, or can just crop the picture to any size you please. The icon for crop tool is shown in Figure 3.6.



Fig. 3.6: Icon for crop tool

Eyedropper (Keyboard: I)

The eyedropper tool lets the user click on any part of the canvas and take a sample of a colour and drop it at a specific point. The eyedropper will change the foreground colour to the colour it samples from the canvas.

The icon for eyedropper is shown in Figure 3.7.

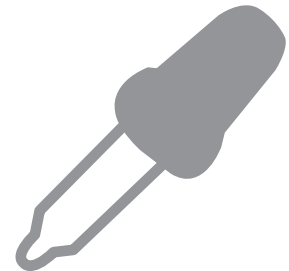


Fig. 3.7: Icon for eyedropper

Healing brush (Keyboard: J)

The healing brush lets one take the sample from a part of a photograph and uses it to paint over another part. Once the user is done, Photoshop will examine the surrounding areas and try to blend what the user has painted in with the rest of the picture. The icon for healing brush is shown in Figure 3.8.



Fig. 3.8: Icon for healing brush

Paintbrush and pencil (Keyboard: B)

Paintbrush is a tool that resembles a paintbrush. The pencil tool resembles a pencil. The paintbrush, however, can be set to different kinds of brushes. One can paint using standard paintbrush and airbrush styles, or even with leaves and other shapes. The icon for paintbrush is shown in Figure 3.9.

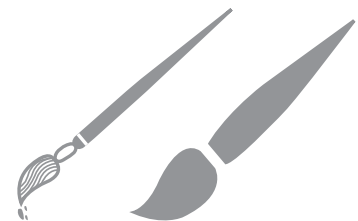


Fig. 3.9: Icon for paintbrush



Fig. 3.10: Icon for clone stamp

Clone stamp (Keyboard: S)

The clone stamp tool allows the user to duplicate a part of an image. It involves setting a sampling point in the image which is used as a reference to create a new cloned area. Like healing brush, clone stamp lets the user sample a part of a photograph and use it to paint over another part.

The icon for clone stamp is shown in Figure 3.10.

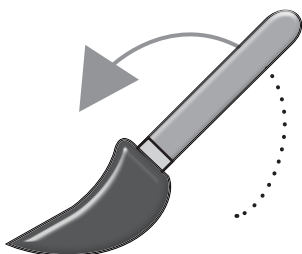


Fig.3.11: Icon for history brush

History brush (Keyboard: Y)

History brush lets one paint back in time. Photoshop keeps track of all the moves that the user makes (50 by default). The History Brush allows you to restore parts of an image to an earlier history state by painting over them. Say, you brightened up the entire photo but wanted to make a certain area look like it did before you brightened it, so you can use the history brush and paint that area to get the previous darkness. The icon for history brush is shown in Figure 3.11.

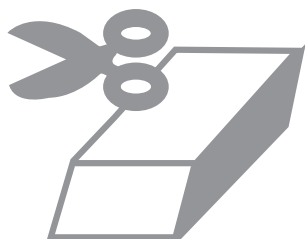


Fig. 3.12: Icon for eraser tool

Eraser tool (Keyboard: E)

The eraser tool changes pixels to either the background colour, or to transparent. It erases pixels as you drag it across the image. The background eraser tool allows you to remove the background colour from an image or layer. The magic eraser tool erases all the colours within a set tolerance. The icon for eraser tool is shown in Figure 3.12.

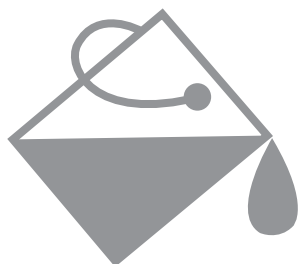


Fig. 3.13: Icon for paint can

Paint can and gradient tools (Keyboard: G)

The paint tool lets one fill in a specific area with the current foreground colour. The gradient tool will, by default, create a gradient that blends the foreground and background tool colour. The icon for paint can is shown in Figure 3.13.

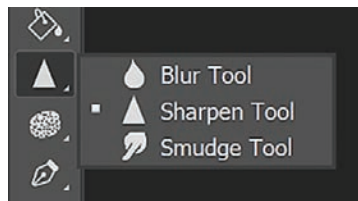


Fig. 3.14: Icons for blur, sharpen and smudge tools

Blur, Sharpen and Smudge tools (Keyboard: None)

All three tools act like paintbrushes, but each has a different impact on a picture. The 'Blur' tool will blur the area where you paint, the 'Sharpen' tool will sharpen it, and 'Smudge' tool will smudge the area all around the

canvas. The Smudge tool is useful in drawing, creating nicely blended colours, and creating wisps and smoke that you can add to photos. The icons for blur, sharpen and smudge tools are shown in Figure 3.14.

Dodge, Burn and Sponge tools (Keyboard: O)

The Burn, Dodge and Sponge tools are paintbrush-like tools that manipulate light and colour intensity. The Burn tool can make areas in your photo darker. The Dodge tool can make them lighter. The Sponge tool can saturate or de-saturate colour in the area you paint with it. These are all useful tools for photo touch-ups. The icons for dodge, burn and sponge tools are shown in Figure 3.15.

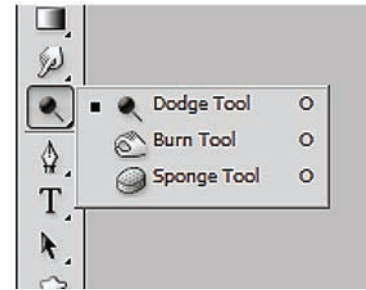


Fig. 3.15: Icons for dodge, burn and sponge tools



Fig. 3.16 : Icon for pen tool

Pen tool (Keyboard: P)

The pen tool is used as a path creator. It is required for designing, selecting smooth surfaces or preparing layouts. The pen tool is used for drawing vector graphics. The icon for pen tool is shown in Figure 3.16.

Type tool (Keyboard: T)

The type tool allows one to type horizontally. Tools hidden beneath the horizontal type tool will let one type vertically, and also create horizontal and vertical text masks. The icon for type tool is shown in Figure 3.17

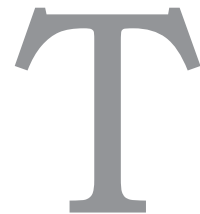


Fig. 3.17 Icon for type tool

Path tool (Keyboard: A)

A path is a line that goes from one point to another. A Pen Tool is used to create a path. The Pen Tool creates paths and shapes which can be duplicated and manipulated to create complex selections, masks and objects. The icon for path tool is shown in Figure 3.18.



Fig. 3.18: Icon for path tool

Shape tool (Keyboard: U)

The shape tool lets the user create vector rectangles, rounded rectangles, circles, polygons, lines and custom shapes. This tool is useful when designing or creating shape masks for photos. The icon for shape tool is shown in Figure 3.19.



Fig. 3.19: Icon for shape tool

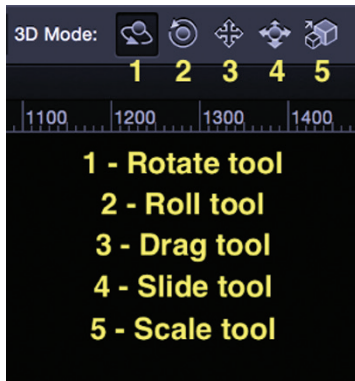


Fig. 3.20: Icons for 3D tools

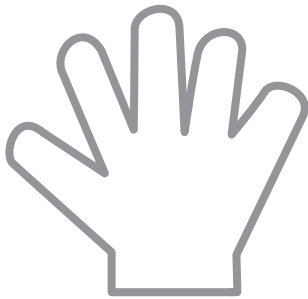


Fig. 3.21 Icon for hand tool



Fig. 3.22 Icon for zoom tool

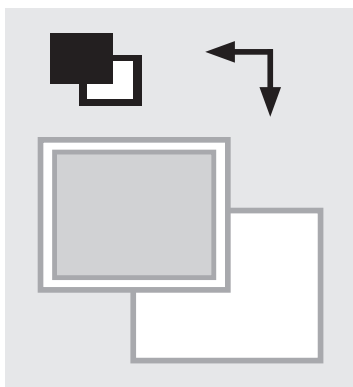


Fig. 3.23: Icon for colour selection tool

3D tools

3D tools are used to rotate, roll, drag, slide and scale 3D objects. Photoshop allows creating and editing of 3D images using 3D tools. The icons for rotate, roll, drag, slide and scale tools are shown in Figure 3.20.

Hand tool (Keyboard: H)

The hand tool allows the user to click and drag around the Photoshop canvas. If the entire canvas fits on the screen, this tool would not do anything. It is for navigating around when the user zooms in, or when a picture is too big to fit on the screen such that only a part of the picture can be seen. This tool helps drag the portions of the picture that need to be seen on the visibility area. The icon for hand tool is shown in Figure 3.21.

Zoom tool (Keyboard: Z)

Zoom tool lets the user zoom in and out of the Photoshop canvas by clicking on a given area. By default, the zoom tool lets one zoom in. To zoom out, hold down the option key and use the zoom tool as one normally would do. The icon for hand tool is shown in Figure 3.22.

Colour selection tools

These tools let one manage the colours being used. The colour on the top is the foreground colour, and the one at the back is the background colour. The foreground colour is what the brushes will use. The two smaller icons on the top are shortcut functions. The left one, showing a black square on a white square will set the foreground and background colours to the default (Keyboard: D). The double-headed curved arrow will swap the foreground and background colours (Keyboard: X). Clicking on either the foreground or background colour will bring up a colour picker, so that the user can set them precisely to what one wants. The icon for colour selection tool is shown in Figure 3.23.

Palettes

Palettes are group of tools used to edit and manipulate an image. These can be seen on the right side of the

screen, when one opens Adobe Photoshop. Palettes include tools palette, options palette, layers palette, adjustment palette, colour palette, and history palette. These can be shown or hidden by using the Window menu and selecting the palette one wish to reveal. They make it easy to navigate through the document, make or add layer adjustments and switch modes. The icon for palettes is shown in Figure 3.24.

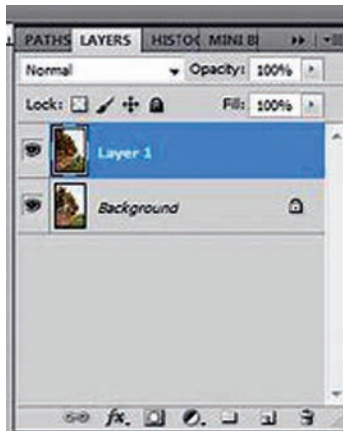


Fig. 3.25: Icon for Layers Palette

Layers Palette

The layers palette is the control panel for layers in Photoshop. Layers are like stacks of transparent papers placed one above the other. Layers can be placed one on top of another, and moved around by clicking on the layer name and dragging the mouse up or down. You can use the layer palette to hide, view, rearrange, delete,

rename, and merge layers. The icon for layers palette is shown in Figure 3.25.

Adjustments Panel

Adjustments panel is where one can easily create and edit adjustment layers. Adjustment layers are non-destructive image alterations that affect all layers below them, and can easily be turned on and off. Their most common use is for colour correction (level and curve adjustments), but there are many kinds of adjustments one can perform that can dramatically alter the look of an image. The icon for adjustments panel is shown in Figure 3.26.

Colour Channels

The colour channels palette allows one to look at specific colours that make a picture. If one is in RGB mode, one will get red, green and blue colours. These colour channels will differ if one is in a

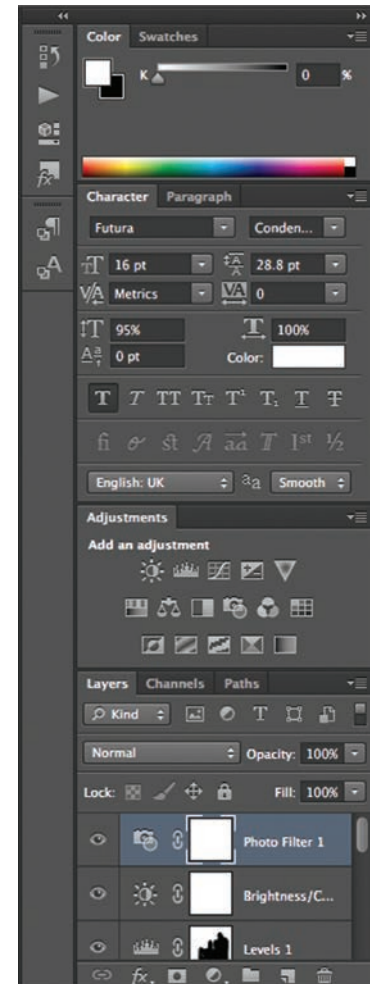


Fig. 3.24: Icon for palettes

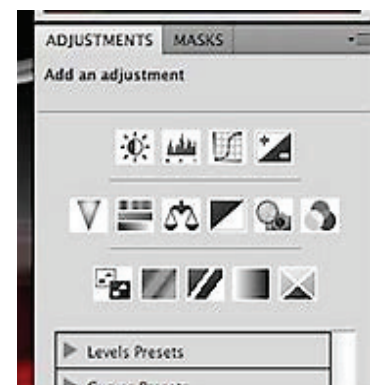


Fig. 3.26: Icon for Adjustments Panel

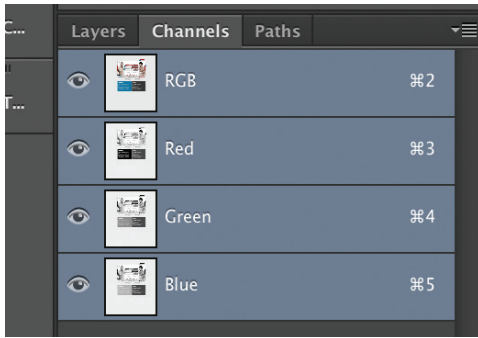


Fig. 3.27: Icon for Colour Channels

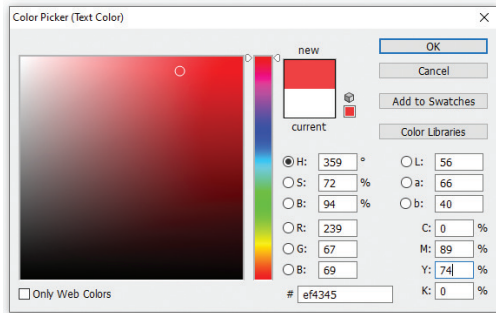


Fig. 3.28: Icon for Colour Picker



Fig. 3.29: Icon for Colour Swatches Palette

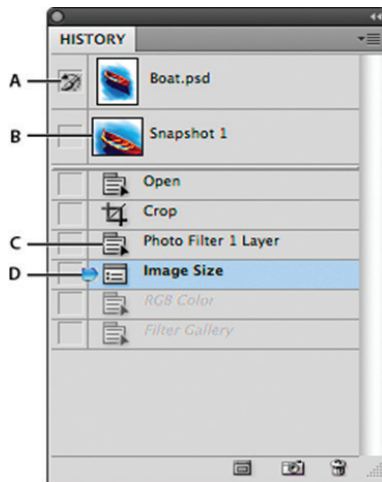


Fig. 3.30: Icon for History Palette

- A— sets the source for the history brush
- B— Thumbnail of a snapshot
- C— History state
- D— History state slider

different colour space (such as CMYK). When one chooses a specific colour, an image will be shown in different versions of black and white. This is because each colour channel is simply monochromatic, representing light in each channel. Switching between these channels is useful for making colour channel-specific touch-ups, overall contrast enhancements, and also for converting a photo into black and white. The icon for colour channels is shown in Figure 3.27.

Colour Picker

This palette lets one easily alter the foreground and background colours using sliders. The icon for colour picker is shown in Figure 3.28.

Colour Swatches Palette

Colour swatches show a large variety of colours, tints, gradients, and patterns. The colour swatches palette is a set of pre-defined colours one can choose from. One can compare colours and try different combinations. The icon for colour swatches palette is shown in Figure 3.29.

History Palette

The history palette allows one to go back in time to undo previous alterations. The standard undo command (in the edit menu) will toggle between undoing and redoing the latest action performed on an image. The history panel is where one can go back much further (50 actions by default). The icon for history palette is shown in Figure 3.30.



Text and Paragraph Palette

The text and paragraph palette allows the user to make all sorts of adjustments to a text created with the Type tool. These options are similar to what one finds in word processing but one can also specify things like character width and spacing, which are more useful in design. The icon for text and paragraph palette is shown in Figure 3.31.

Menu Bar

The menu bar is used to open and save files, adjust the canvas size, access some of the editing tools, open and close various windows, and more. The menu bar consists of ten menus, namely—File, Edit, Image, Layer, Type, Select, Filter, View, Window, and Help. Each of those main menus has additional sub-menus. The icon for menu bar is shown in Figure 3.32.

Let us now look at each of these menus.

File

Just like any word processing software, file menu in Photoshop is used for making new files, opening existing ones, saving files, and printing. To see the File menu, press the Alt and F keys simultaneously. Using the Open Recent option under the File menu, you can access the 10 most recently opened files.

Edit

Using the Edit menu, you can cut, copy, paste, and also do, undo or redo a recent action. It is mainly used to transform layers and set colour spaces.

Image

Using the Image menu, you can change the mode of the whole canvas, between modes like RGB colour, grayscale, CMYK colour, multichannel and duotone. A sub-menu of Image menus, called as Adjustments, lets you access various tools for changing the image's brightness, contrast, levels, exposure, vibrancies, hue,

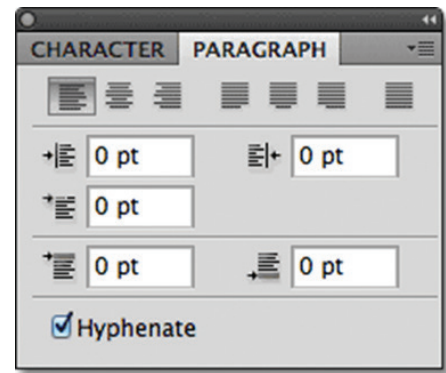


Fig. 3.31: Icon for Text and Paragraph Palette

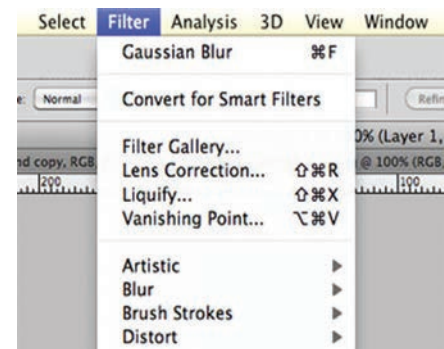


Fig. 3.32: Icon for Menu Bar

saturation and colour balance. In Image menu, you will also find Photo Filter, Channel Mixer, and Colour Lookup tools. There are other options, such as Auto Tone, Auto Contrast, Auto Colour, Image size, Canvas size, Crop and Trim available with image menu.

Layer

Using this menu, you can create new layers, duplicate the existing ones, delete and rename layers. One has options for creating layer masks, adjustment layers, and fill layers. One can also use it to create and edit smart objects, or export their contents to a file or replace the contents with that of another smart object. You can group and hide layers, lock layers, arrange layers behind or in front of other ones, link and merge layers, and flatten the image to automatically merge all the layers.

Type

Type menu helps you to manipulate the text on the canvas. The first option lets you show or hide the character, character styles, paragraph, and paragraph style panels. Using the type menu, one can create work paths, convert a text layer to a shape, rasterise the text layer to make it an image, warp the text, change the font preview size, and change language options.

Select

Using the Select menu, one can select all the layers and deselect everything from this menu. The Refine Edge tool in this menu is used to change the edge of a selection. The Grow option in this menu can automatically increase the selection to nearby pixels to effectively increase the overall selection area.

Filter

Photoshop Filters can blur, sharpen, distort and alter an image. You can use filter menu to preview artistic, brush stroke, distort, sketch, texture and other built-in filters.

Rasterisation refers to the task of taking an image described in vector graphics format, and converting into a raster image.



View

The View menu includes tools that enable a ruler and create guides that one can follow for precise positioning, and change over to full screen mode. It provides for different ways of looking at the images. One can zoom in or zoom out to show the actual pixel size, and also zoom as per the print size.

Window

Window menu is used to selectively show or hide windows and arrange workspace. It can be used to toggle windows of Actions, Adjustments, Brush, Channels, Colour, History, Layers, Notes, Paths, Timeline and Tools.

Help

The Help menu allows to search information about the specific functions and solutions in Photoshop.

Brush and Tool Presets in Photoshop

One can save a set of brush options as a preset in order to quickly access brush characteristics that one would like to use frequently. Photoshop includes several sample brush presets (Figure 3.33). One can start with these presets and modify them to produce new effects. Many original brush presets are available for download on the web.

One can quickly choose presets from the 'brush preset' picker in the options bar, which allows one to temporarily modify the size of a brush preset.

One needs to save tool presets when one wants to store customised brush tip characteristics along with settings from the options bar, such as opacity, flow and colour.

Brush Tip Options

The brush tip options control how the colour is applied. One can apply colour gradually with soft edges, large brush strokes, various brush dynamics, different blending properties and different shapes. One can apply a texture or simulate spraying paint with an airbrush. One can use the Brush panel to set brush tip options.



Paint Tool Options

Modes

Modes set the method for blending the colour one paints with the underlying existing pixels. The available modes change with the currently selected tool. Paint modes are similar to layer blending modes.

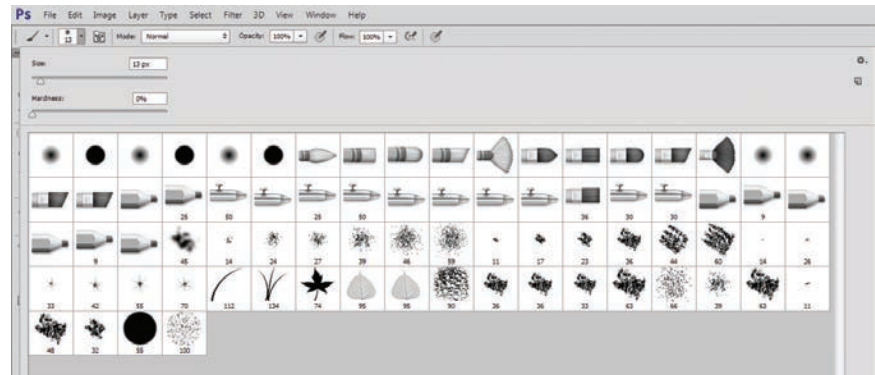


Fig. 3.33: A view of brush tip tool options in brush presets in Adobe Photoshop

Opacity

Opacity determines how we ‘see-through’ the contents of the layer. 100 per cent opacity means that the layer is completely opaque, and anything painted on the layer will completely hide whatever is beneath it. Reducing the opacity allows the layer(s) under it to show through (Figure 3.34). As one paints over an area, the opacity does not exceed the set level no matter how many times one moves the pointer over the area, until one releases the mouse button. If one strokes over the area again, one applies additional colour, equivalent to the set opacity.

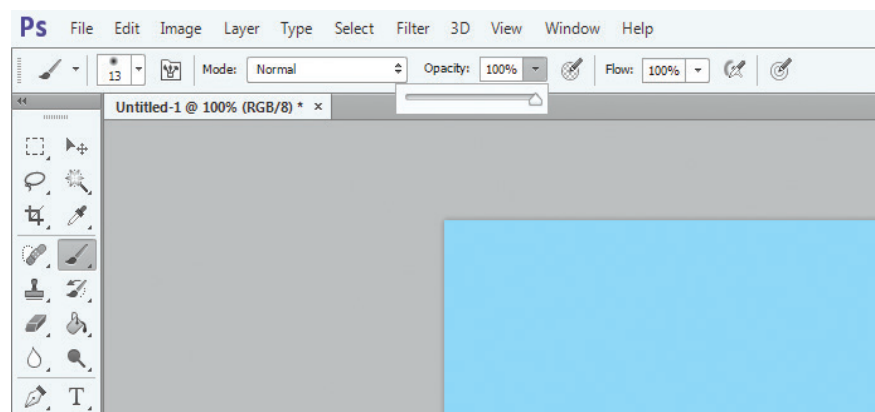


Fig. 3.34: A view of brush tool with opacity option in Adobe Photoshop

Flow

Flow sets the rate at which colour is applied as one moves the pointer over an area (Figure 3.35). As one paints an area, while holding down the mouse button, the amount of colour builds up based on the flow rate. For example, if one sets the opacity to 33 and the flow also to 33 per cent, each time one moves over an area, its colour moves 33 per cent towards the brush colour. The total will not exceed 33 per cent opacity unless one releases the mouse button and strokes over the area again.

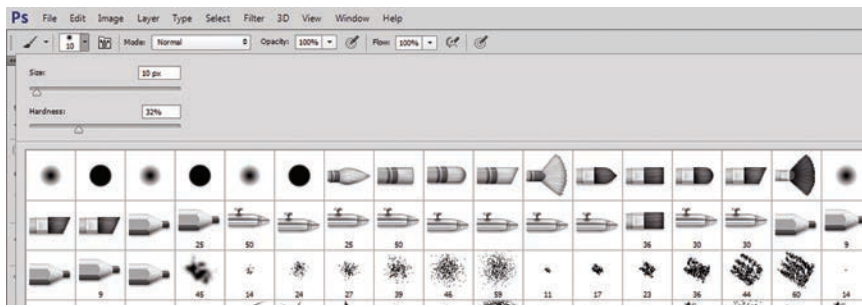


Fig. 3.35: A view of brush tool with flow option in Adobe Photoshop

Graphic Design Basics in Photoshop

There are three kinds of graphics that we generally work on in Adobe Photoshop software. These are as follows:

- (i) Vector graphics
- (ii) Raster graphics
- (iii) Scalable vector graphics

Vector graphics

Vector graphics is the creation of digital images through a sequence of commands that place lines and shapes in a given two-dimensional or three-dimensional space. If you enlarge a vector graphic, the mathematical formula stays the same, rendering the same visual graphic irrespective of the size. Thus, vector graphics can be scaled to any size without losing quality. A vector file is also called as geometric file, and it is easier to modify than raster image file. Vector programmes are best for creating logos, drawings, illustrations and technical drawings.

NOTES

Raster graphics

Raster graphics or bitmap image is a dot matrix data structure, representing, generally, a rectangular grid of pixels, or points of colour. Raster images, which are made of pixels, are created with pixel-based programmes or captured with a camera or scanner. A raster image has a specific number of pixels; therefore, if you enlarge the image file without changing the number of pixels, the image will look blur. Raster programmes are best for editing photos and creating continuous tone images with soft colour blends.

A vector image can be converted into a raster graphic image, which maps bits directly to a display space. The vector image can be converted to a raster image file prior to its display so that it can be ported between systems.

Scalable vector graphics

Scalable Vector Graphics is an XML (Extensible Markup Language) based vector image format for two-dimensional graphics, with support for interactivity and animation. SVG images can be created and edited with any text editor, as well as, drawing software.

Selecting Cursor Preference

The painting tools have three possible cursors: standard cursor (icon from the toolbox), cross hair (denoted with symbol '+'), and a cursor that matches the size and shape of the currently selected brush tip.

- (1) Choose Edit> Preferences> Cursors (Windows) or Photoshop> Preferences> Cursors (Mac OS).
- (2) Select the desired cursors in both the Painting Cursor area and the Other Cursor area. The sample cursors change to reflect your choices. For a Brush Tip cursor, choose a size and include a cross hair in the cursor.
 - Normal Brush Tip restricts the cursor size to areas of the brush stroke that have 50 per cent or more opacity.
 - Full Size Brush Tip sizes the cursor to the entire area affected by the brush stroke. For



soft brushes, this produces a larger cursor size than the normal setting to include areas of the brush stroke with lighter opacity.

Practical Exercises

Activity 1

Using brush tool in Adobe Photoshop

Material required

Computer, Adobe Photoshop software

Procedure

- Create digital graphics on a blank canvas of 800 × 600 pixels with a resolution of 150 pixels per inch. The background must be white. Click on the brush tool and create five different strokes with brush hardness of 32 per cent and with the given size of brushes — 10, 20, 30, 40 and 50.
- Now, observe and compare these five different strokes on the digital canvas.
- Click on the Brush Tool and create five different strokes of red colour with brush hardness of 32 per cent, and with five different size of brushes — 5, 25, 45, 65 and 85.

Choose a foreground colour.

- Select the Brush or Pencil tool. The Brush tool creates soft, as well as, hard strokes of a colour. The Pencil tool creates only hard-edged lines.
- Choose a brush from the Brush Presets panel.
- Set tool options for mode and opacity in the options bar.

Do one or more of the following:

- Click and drag in the image to paint.
- To draw a straight line, click at a starting point in the image. Press the Shift key and click at an ending point.
- When using the Brush tool as an airbrush, press the mouse button without dragging to build up colour.
- Now, observe and compare these five different strokes on the digital canvas.

Check Your Progress

A. Fill in the Blanks

1. Vector graphics is the creation of digital images through a sequence of commands that place _____ and shapes in a given two-dimensional or three-dimensional space.



NOTES

2. A _____ graphics or bitmap image is a dot matrix data structure, representing a generally rectangular grid of pixels, or points of colour, viewable via a monitor, paper or other display medium.
3. Scalable _____ graphics is an XML-based vector image format for two-dimensional graphics with support for interactivity and animation.
4. The Brush and _____ tool work like traditional drawing tools applying colour with brush strokes.
5. The _____ tool helps in moving objects in a given layer around the Adobe Photoshop canvas.
6. The _____ tool helps in selecting a part of the canvas in a specific shape.
7. The _____ is a free-form selection tool that lets you drag around the canvas.
8. The colour _____ palette is a set of pre-defined colours.

B. Subjective question

1. Describe the functions of any five drawing and painting tools of Adobe Photoshop.

What Have You Learnt?

On completion of this session, you will be able to:

- differentiate between various kinds of graphics.
- demonstrate the use of tools for painting and editing image colour.
- create a digital graphic using appropriate tools for editing and painting image.

SESSION 3: BLENDING MODES

Blending Mode

Blending mode, as specified in the options bar, controls how pixels in the image are affected by a painting or editing tool. The majority of blend modes have keyboard shortcuts.

- The base colour is the original colour in the image.
- The blend colour is the colour being applied with the painting or editing tool.
- The result colour is the new colour formed from the blend.



Normal Dissolve	}	Normal
Darken Multiply Colour Burn Linear Burn	}	Darken
Lighten Screen Colour Dodge Linear Dodge (Add)	}	Lighten
Overlay Soft Light Hard Light Vivid Light Linear Light Pin Light Hard Mix	}	Contrast
Difference Exclusion	}	Inversion
Subtract Divide	}	Cancellation
Hue Saturation Colour Luminosity	}	Component

Fig. 3.36: Blend mode groups

	Shift + Alt + Option+
Normal	← N
Dissolve	← I
Darken	← K
Multiply	← M
Colour Burn	← B
Linear Burn	← A
Lighten	← G
Screen	← S
Colour Dodge	← D
Linear Dodge (Add)	← W
Overlay	← O
Soft Light	← F
Hard Light	← H
Vivid Light	← V
Linear Light	← J
Pin Light	← Z
Hard Mix	← L
Difference	← E
Exclusion	← X
Hue	← U
Saturation	← T
Colour	← C
Luminosity	← Y

Fig. 3.37: Keyboard shortcuts to blend modes in Adobe Photoshop (Windows)

Normal

It is a blending mode that edits or paints each pixel to make it the resultant colour. In the case of a painting tool, the blend colour will completely coat the base colour, whereas in the case of an edit tool, the edit value will completely override the existing colour.

In the case of a painting tool, the blend colour will completely coat the base colour. In case of an edit tool,



Fig. 3.38: Use of normal mode

the edit value will completely override the existing colour. This is the default mode. Normal mode is called ‘threshold’ when one is working with a bitmapped or indexed-colour image (Figure 3.38).

Dissolve

‘Dissolve’ is used to edit or paint each pixel to bring out the resultant colour. However, the resultant colour is a random replacement of the pixels with the base or blend colour, depending on the opacity at any pixel location (Fig 3.39). This mode can be seen only on a layer with an opacity setting of less than 100 per cent.



Fig. 3.39: Use of dissolve blending mode

Behind

'Behind' mode edits or paints only on the transparent part of a layer. This mode works only in layers with Lock Transparency deselected and is analogous to painting on the back of transparent areas on a sheet of acetate.

Darken

Pixels lighter than the blend colour are replaced, and those darker than the blend colour do not change.

Multiply

It is a blending mode that looks at the colour information in each channel and multiplies the base colour by the blend colour. The resultant colour is always a darker colour. Multiplying any colour with black produces black. Multiplying any colour with white leaves the colour unchanged. When you are painting with a colour other than black or white, successive strokes with a painting tool produce progressively darker colours. The effect is similar to drawing on the image with multiple marking pens (Figure 3.40).



Fig. 3.40: Use of multiply blending mode

Colour Burn

It is a blending mode that looks at the colour information in each channel and darkens the base colour to reflect the blend colour by increasing the contrast between the two. Blending with white produces no change.

Linear Burn

Linear burn mode looks at the colour information in each channel and darkens the base colour to reflect the blend colour by decreasing the brightness. Blending with white produces no change.

Lighten

It looks at the colour information in each channel and selects the base or blend colour—whichever is lighter—as the resultant colour. Pixels darker than the blend colour are replaced, and pixels lighter than the blend colour do not change.

Screen

The Screen looks at each channel's colour information and multiplies the inverse of the blend and base colours. The resultant colour is always a lighter colour. Screening with black would not change the colour. Screening with white produces white. The effect is similar to projecting multiple photographic slides on top of each other.

Colour Dodge

The 'colour dodge' mode looks at the colour information in each channel and brightens the base colour to reflect the blend colour by decreasing contrast between the two. Blending with black produces no change.

Linear Dodge

It looks at the colour information in each channel and brightens the base colour to reflect the blend colour by increasing the brightness. Blending with black produces no change.

Overlay

Overlay multiplies or screens the colours, depending on the base colour. Patterns or colours overlay the existing



pixels while preserving the highlights and shadows of the base colour. The base colour is not replaced but mixed with the blend colour to reflect the lightness or darkness of the original colour (Figure 3.41).



Fig. 3.41: Use of overlay blending mode

Soft Light

This blending mode darkens or lightens the colours, depending on the blend colour. The effect is similar to shining a diffused spotlight on the image. If the blend colour (light source) is lighter than 50% grey, the image is lightened as if it were dodged. If the blend colour is darker than 50 per cent grey, the image is darkened.

Hard Light

Hard light blending modes multiply or screen the colours, depending on the blend colour. The effect is similar to shining a harsh spotlight on the image. If the blend colour (light source) is lighter than 50 per cent grey, the image is lightened, as if it were screened. This is useful for adding highlights to an image. If the blend colour is darker than 50 per cent grey, the image



Fig. 3.42: Use of hard light blending mode

is darkened, as if it were multiplied. This is useful for adding shadows to an image (Figure 3.42).

Vivid Light

The 'vivid light' mode burns or dodges the colours by increasing or decreasing the contrast, depending on the blend colour. If the blend colour (light source) is lighter than 50 per cent grey, the image is lightened by decreasing the contrast. If the blend colour is darker than 50 per cent grey, the image is darkened by increasing the contrast.

Linear Light

The linear light mode burns or dodges the colours by decreasing or increasing the brightness, depending on the blend colour. If the blend colour (light source) is lighter than 50 per cent grey, the image is lightened by increasing the brightness. If the blend colour is darker than 50 per cent grey, the image is darkened by decreasing the brightness.

Pin Light

It replaces the colours, depending on the blend colour. If the blend colour (light source) is lighter than 50 per cent grey, pixels darker than the blend colour are

replaced, and pixels lighter than the blend colour do not change. If the blend colour is darker than 50 per cent grey, pixels lighter than the blend colour are replaced, and pixels darker than the blend colour do not change. This is useful for adding special effects to an image (Figure 3.43).



Fig. 3.43: Use of pin light blending mode

Hard Mix

The 'hard mix' mode adds red, green and blue channel values of the blend colour to the RGB values of the base colour. If the resulting sum for a channel is 255 or greater, it receives a value of 255; if less than 255, then the value of 0 is received. Therefore, all blended pixels have red, green and blue channel values of either 0 or 255. This changes all pixels to primary additive colours (red, green or blue), white or black.

Practical Exercises

Activity 1

Understanding blending mode

Material required

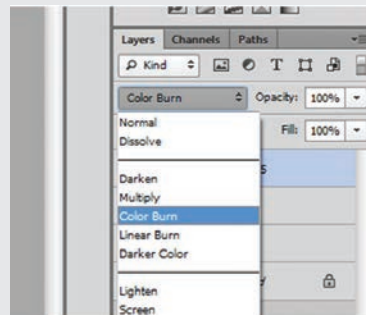
Computer, Adobe Photoshop software

Procedure

- Create a digital graphic on a blank canvas of size 800 × 600 pixels, Resolution: 150 pixels per inch with white background.

NOTES

- Import two different photographs and resize them to overlap with each other in two different layers.
- Now, select the topmost layer and change the blending mode of this layer to Colour Burn.
- Now, observe the difference in the blending of these two different images in the same file. We have changed the blending mode of the topmost layer.
- Now, you can export this file to JPG format to be used in either MS PowerPoint as background graphics or taking out a digital printout.



Activity 2

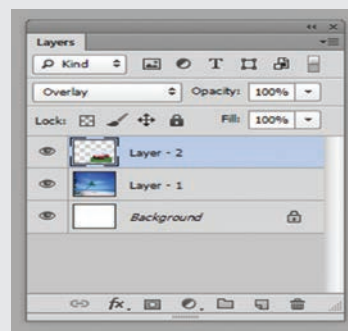
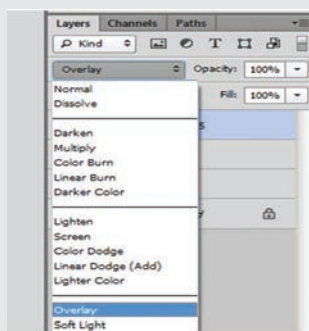
Understanding the difference between blending mode and overlay mode

Material required

Computer, Adobe Photoshop software

Procedure

- Create a digital graphics on a blank canvas of size 800 × 600 pixels, Resolution: 150 pixels per inch with white background.
- Import two different photographs and resize them to overlap with each other in two different layers.
- Now, select the topmost layer and change the Blending Mode of this layer to Overlay Mode.



- Now, observe the difference in the blending of these two images in the same file. We have changed the Blending Mode of the topmost layer.
- Now, export this file to JPG format to be used in either MS PowerPoint as background graphics or take out a digital printout.

A. Match the Columns

Column A	Column B
1. It darkens or lightens the colour depending on the blend colour. The effect is similar to shining a diffused spotlight on an image.	(a) Vivid light
2. Multiplies or screens the colours, depending on the blend colour. The effect is similar to shining a harsh spotlight on the image.	(b) Hard light
3. Burns or dodges the colours by increasing or decreasing the contrast, depending on the blend colour.	(c) Soft light
4. Burns or dodges the colours by decreasing or increasing the brightness, depending on the blend colour.	(d) Linear light

B. Subjective Questions

- Explain the following modes of blending.
 - Dissolve
 - Darken
 - Colour burn
 - Linear burn
 - Screen
- Describe the use and application of blending modes.

What Have You Learnt?

On completion of this session, you will be able to:

- demonstrate the knowledge of different blending modes.

SESSION 4: COLOUR MODES

The colour mode or image mode determines how colours combine, based on the number of channels. Different colour modes result in different levels of colour detail and file size. Use CMYK colour mode for images in a full colour print brochure, and RGB colour mode for images in web or E-mail. The various colour modes are given hereby.



NOTES

1. Bitmap
2. Grayscale
3. Duotone
4. Indexed colour
5. RGB
6. CMYK colour
7. Lab colour
8. Multichannel

Bitmap Mode

A Bitmap is an image where each pixel is either black or white (no shades in between). Bitmap images can be compressed making the file size very small, despite having a lot of pixels. It is useful for printing or archiving paper documents. The bitmap colour mode has a bit depth of 1, hence also called bitmapped 1-bit images.

You can convert a colour image into bitmap through the following steps:

- First, convert your image into the grayscale colour mode.
- On top Menu, click on Image >> Mode >> Grayscale
- Now click 'OK' in 'Discard Colour Information?' dialog box.
- Your image will get converted to grayscale.
- Now go to the top Menu again, click on Image >> Mode >> Bitmap
- Your image will get converted to Bitmap.

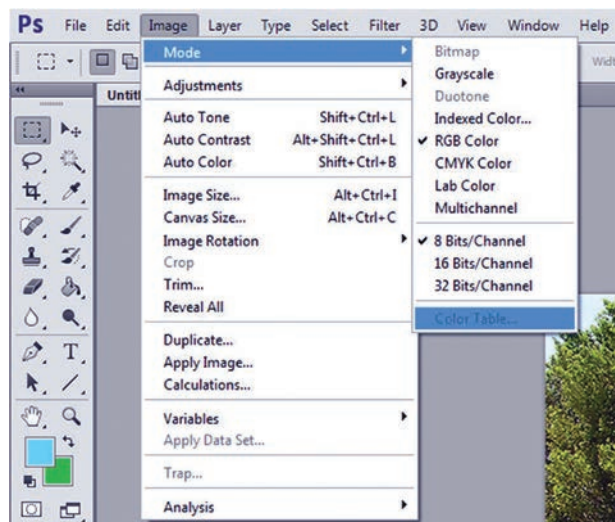


Fig. 3.44: A view of mode menu under image tab in Adobe Photoshop

Grayscale Mode

Grayscale mode uses different shades of grey in an image. In an 8 bits image, there can be up to 256 shades of grey. Every pixel of a grayscale image has a brightness value ranging from 0 (black) to 255 (white). In a 16 and 32 bits image, the number of shades is much greater than that in an 8 bits image.

Grayscale values can also be measured as percentages of black ink coverage (0 per cent is equal to white, 100 per cent is equal to black).

Grayscale mode uses the range defined by the workspace setting that one specifies in the Colour Settings dialog box. You can convert the image into grayscale through the following steps:

On top Menu, click on Image >> Mode >> Grayscale.

Duotone

Monotone means a single colour, duotone means two-colour, tritone is three-colour and quadtone is four-colour. An image can be converted to Duotone through the following steps:

Image menu >> Mode >> Grayscale >> OK. Again, go to Image menu >> Mode >> Duotone. Select a Preset and Type. Click OK.

Indexed Colour

Indexed colour mode produces 8 bits image files with up to 256 colours. When converting to indexed colour, Photoshop builds a colour lookup table (CLUT), which stores and indexes the colours in the image. If a colour in the original image does not appear in the table, the programme chooses the closest one or uses dithering to simulate the colour using available colours. Although its palette of colours is limited, indexed colour can reduce the file size and yet maintain the visual quality needed for multimedia presentations, web pages, etc. For extensive editing, one needs to convert the existing image temporarily into RGB mode.

Indexed colour files can be saved in Photoshop, BMP, DICOM (Digital Imaging and Communications in Medicine), GIF, Photoshop EPS, Large Document



NOTES

Format (PSB), PCX, Photoshop PDF, Photoshop Raw, Photoshop 2.0, PICT, PNG, Targa, or TIFF formats.

RGB

Photoshop RGB colour mode uses the RGB (Red, Green and Blue) model, assigning an intensity value to each pixel. In an 8 bits per channel image, the intensity value ranges from 0 (black) to 255 (white) for each of the RGB components. For example, a bright red colour has an R value of 246, G of 20 and B of 50. When the values of all three components are equal, the result is a shade of neutral grey. When the values of all components are 255, the result is white. When the values are 0, the result is black.

RGB images use three colours or channels to reproduce colours on screen. In 8 bits per channel image, the three channels translate to 24 (8 bits \times 3 channels) bits of colour information per pixel. With 24 bits images, the three channels can reproduce up to 16.7 million colours per pixel.

Although RGB is the standard colour model, the exact range of colours represented can vary, depending on the application or display device. The RGB colour mode in Adobe Photoshop varies according to the workspace setting that is specified in the Colour Settings dialog box. You can convert an image to RGB colour through the following steps:

Image menu >> Mode >> RGB Colour.

CMYK Colour Mode

In the CMYK mode, each pixel is assigned a percentage value for each of the process inks. The lightest (highlight) colours are assigned small percentages of process ink colours, while darker (shadow) colours have higher percentages. For example, a bright red might contain 2 per cent cyan, 93 per cent magenta, 90 per cent yellow, and 0 per cent black. In CMYK images, white colour is generated when all the four components have values of 0 per cent.

One needs to use the CMYK mode when preparing an image to be printed using process colours. Converting an RGB image into CMYK creates colour separation.



If one starts with an RGB image, it is best to edit first in RGB, and then, convert it into CMYK at the end of the editing process. In RGB mode, one can use the 'Proof Setup' command to simulate the effects of CMYK conversion without changing the actual image data. One can also use CMYK mode to work directly with CMYK images scanned or imported from high-end systems. Although CMYK is a standard colour model, the exact range of colours represented can vary, depending on the press and printing conditions. The CMYK colour mode in Photoshop varies according to the workspace setting that one specifies in the Colour Settings dialog box. You can convert an image to CMYK by the following steps:

Click on Image menu>> click on Mode>> click CMYK. Then, click on the OK button to convert the image to CMYK colour mode.

Lab Colour

The Lab colour mode is a combination of three components i.e., 'L' for lightness and 'a' and 'b' are the axis components. The lightness ranges from 0 to 100, whereas the 'a' component (green-red axis), and the 'b' component (blue-yellow axis) ranges from +127 to -128. You can convert an image to lab colour through the following steps:

Go to Image menu > click on it. Next, select Mode >> click on Lab Colour.

Multichannel

The Multichannel colour mode gives 256 shades of grey in each channel. It is used for specialised printing. You can convert an image to multichannel through the following steps:

Image menu >> Mode >> Multichannel.

Practical Exercises

Activity 1

Understanding grayscale mode

Material required

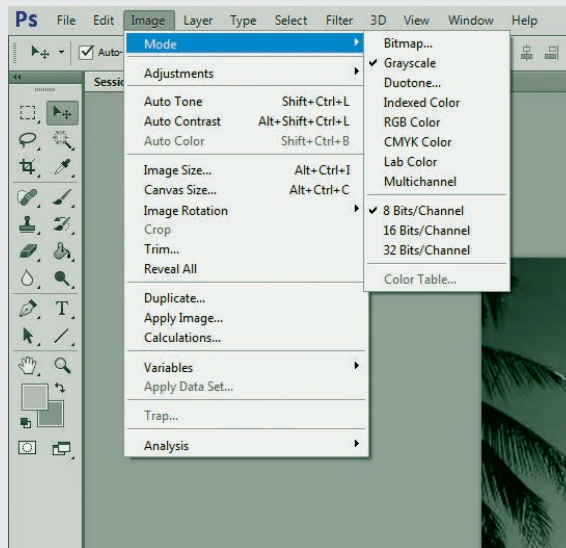
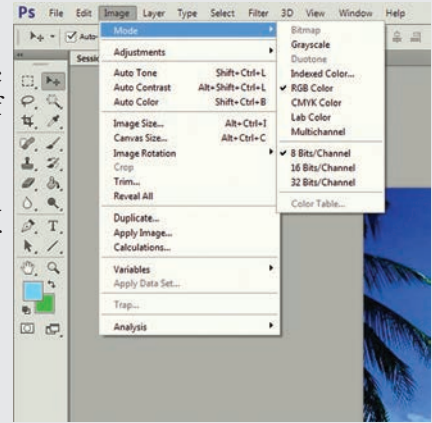
Computer, Adobe Photoshop software



NOTES

Procedure

- Create a digital graphic on a blank canvas of size 800×600 pixels, Resolution: 150 pixels/inch, white background and RGB default colour mode.
- Import two different photographs and resize them to overlap. Use different tools to develop a creative design. Now, go to Main Menu > Image > Mode and select Grayscale colour mode.



- Now you can export this file to JPG or take out a digital printout, at it is now using 8 Bit Grayscale colour mode and the file size will be small.

Activity 2

Understanding Bitmap colour mode

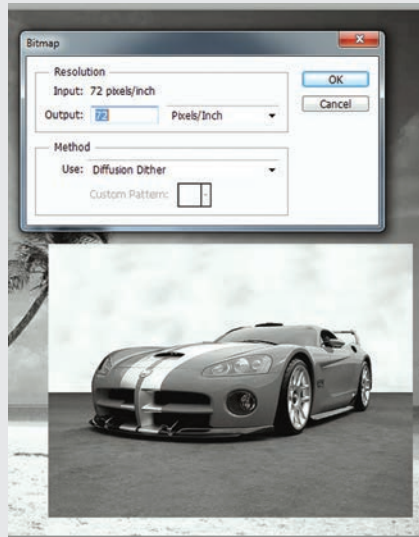
Material required

Adobe Photoshop software

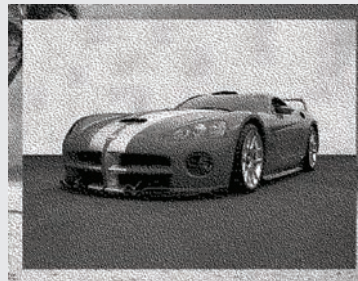
Procedure

- Use the same graphics file, which is now in grayscale colour mode. You will see that the previously disabled Bitmap colour mode is now enabled.
- Go to main menu > Image > Mode and select Bitmap colour mode.





- Select 72 pixels per inch.
- Now, export this file to JPG format to be used in either MS PowerPoint as background graphics or take out a digital printout. This is now using 1 Bit image with only two colours, i.e., either black or white dots as seen in the output of the graphics file.



Check Your Progress

A. Multiple Choice Questions

1. RGB mode can display _____.
 - (a) millions of colours
 - (b) 256 colours
 - (c) 256 grey shades
 - (d) four printed colours
2. CMYK has _____.
 - (a) millions of colours
 - (b) 256 colours
 - (c) 256 grey shades
 - (d) four printed colours
3. Indexed mode has up to _____.
 - (a) millions of colours
 - (b) 256 colours
 - (c) 256 grey shades
 - (d) four printed colours

4. Grayscale mode can have up to _____.
(a) millions of colours
(b) 256 colours
(c) 256 grey shades
(d) four printed colours

B. Subjective Questions

1. Differentiate between grayscale mode and indexed colour mode.
2. Write short notes on the following:
 - (a) RGB colour mode
 - (b) CMYK colour mode
 - (c) Grayscale mode
 - (d) Bitmap mode
 - (e) Indexed colour mode

What Have You Learnt?

On completion of this session, you will be able to:

- select the image using RGB, CMYK, Index, grayscale and Bitmap mode.

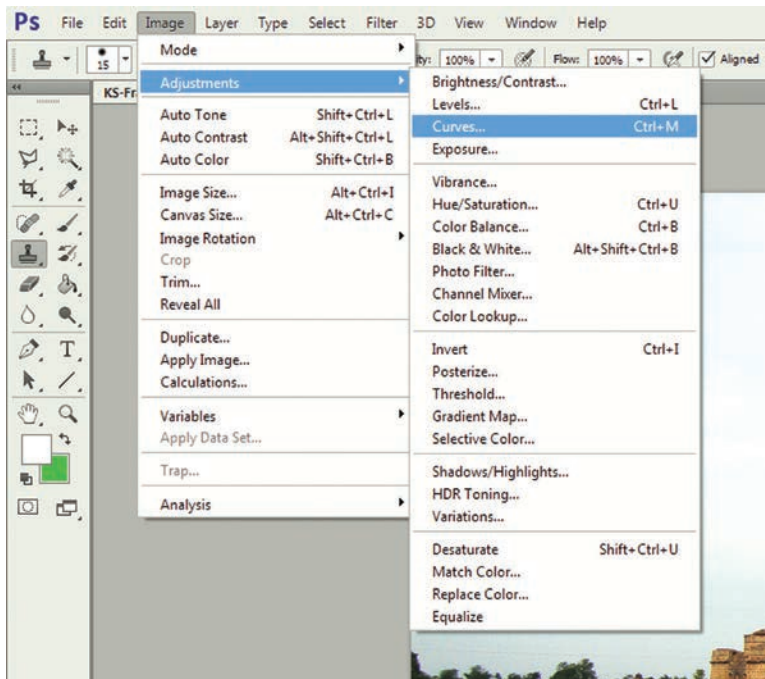


Fig. 3.45: Adjustment menu in Image tab

SESSION 5: IMAGE ADJUSTMENT AND COLOUR CORRECTION

An adjustment layer can be used to increase the brightness or contrast of a photograph without altering the original photo. When an adjustment layer is added to an image, a new layer will appear over the image and Properties panel specific to the type of adjustment selected will pop up. The Properties panel allows to modify the adjustment layer, which in turn will

modify the image. To use an adjustment layer, click on its icon in the Adjustment Layers panel.

Expanding an individual property reveals a graphical control such as a slider or dial. You can then dial in the effect you want in the Properties panel. The controls for each adjustment layer are different and specific to its purpose. The major colour correction tools are as follows:

1. Brightness
2. Contrast
3. Levels
4. Curves
5. Exposure
6. Vibrance
7. Hue or Saturation
8. Colour balance

Brightness and Contrast

The brightness and contrast adjustment lets the user make simple adjustments to the tonal range of an image. Moving the brightness slider to the right increases tonal values and expands image highlights. Moving the slider to the left decreases tonal values and expands shadows. The contrast slider expands or shrinks the overall range of tonal values in the image (Figure 3.46).



Fig. 3.46: Brightness or contrast adjustment

Let us now try to adjust the brightness and contrast.

- In the menu bar, select Image > Adjustments > Brightness/Contrast.
- Adjust the Brightness slider to change the overall brightness of the image. Adjust the Contrast slider to increase or decrease image contrast.
- Click OK.

The adjustments will appear only on the selected layer.

In normal mode, brightness or contrast applies proportionate adjustments to the image layer. When 'Use Legacy' option is selected, Brightness/Contrast simply shifts all pixel values to a higher or lower level. Since this can cause clipping or loss of image detail in highlight or shadow areas, using Brightness/Contrast in Legacy mode is not recommended for photographic images. However, it can be useful for editing masks or scientific imagery.

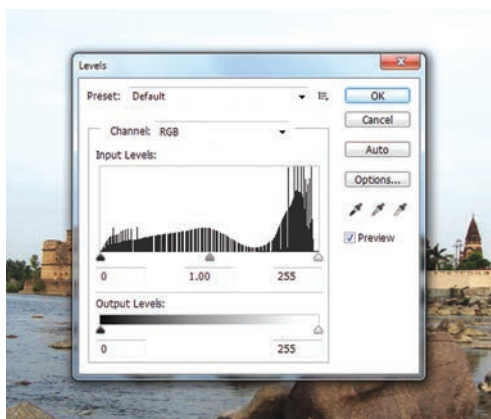


Fig. 3.47: Level adjustments

Input and Output Levels

When we use the levels adjustment layer, we can see two main sliders in the settings: the first, with a histogram, is called 'input levels'. The input level black and white determines what value of input is pure black and what value is pure white. The black slider specifies which input values should be treated as black. Anything to the left of the slider is going to be black. Similarly with the white slider, one has to specify the threshold of input data that should be treated as white. The middle slider is your midpoint.

Input levels are adjustments to the levels that are coming into the system. Whereas, output levels are adjustments to levels going out of the system. The output level black and white determines what colour should be used for the black point and white point of the final image. By default, the Output sliders are at Level 0, where the pixels are black, and at Level 255, where the pixels are white (Fig. 3.47).

With the Output sliders in the default positions, moving the black input slider maps the pixel value to Level 0 and moving the white point slider maps the pixel value to Level 255. The remaining levels are redistributed between Levels 0 and 255. This redistribution increases the tonal range of the image, in effect increasing the overall contrast of the image. The Level adjustments are used to correct

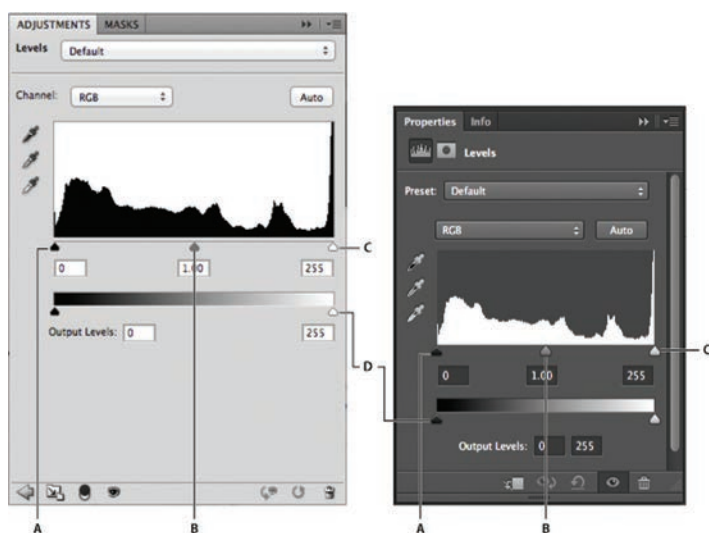


Fig. 3.48: Tonal adjustments

- A— shadows,
- B— midtones,
- C— highlights,
- D— Output level sliders

the tonal range and colour balance of an image by adjusting intensity levels of image shadows, midtones, and highlights. The Levels histogram is a visual guide for adjusting the image key tones (Figure 3.48).

- A. Shadows
- B. Midtones
- C. Highlights
- D. Output level sliders



Hue or Saturation

You have learnt earlier that hue is the colour in the image, saturation is the intensity, or richness of that colour, and the lightness controls the brightness value. The Hue or Saturation Command in Photoshop enables you to adjust the colours in your image based on their hue, saturation, and lightness. The Hue or Saturation icon can be found in the Adjustments panel. This adjustment is especially good for fine-tuning colours in a CMYK image (Fig. 3.49).

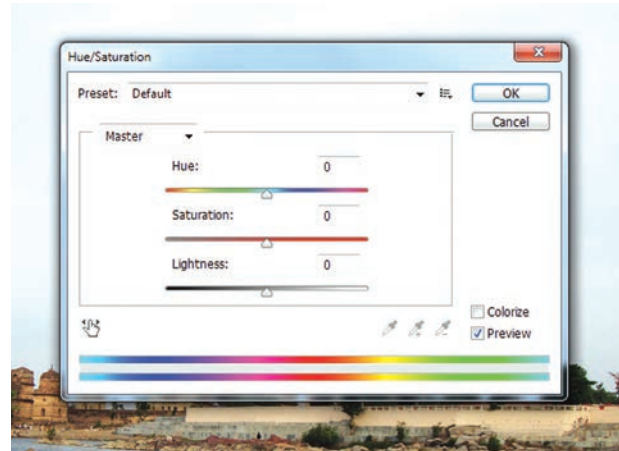


Fig. 3.49: Hue or saturation adjustment window

- Let us now try to adjust the hue or saturation. Choose Layer > New Adjustment Layer > Hue or Saturation. Click OK in the New Layer dialog box.
- In the Properties panel, choose from the menu to the right of On-image adjustment tool.
- Choose Master to adjust all colours at once.
- Choose one of the other preset colour ranges listed for the colour you want to adjust. To modify the colour range, see the range of colours adjusted using Hue or Saturation.
- Choose Hue or Saturation preset from the Preset menu.

To change the Hue, enter a value or drag the slider until you are satisfied with the colours. The values displayed in the box reflect the number of degrees of rotation around the wheel from the original colour of the pixel. A positive value indicates clockwise rotation; a negative value indicates counter-clockwise rotation. Values can range from -180 to +180 (Figure 3.50).

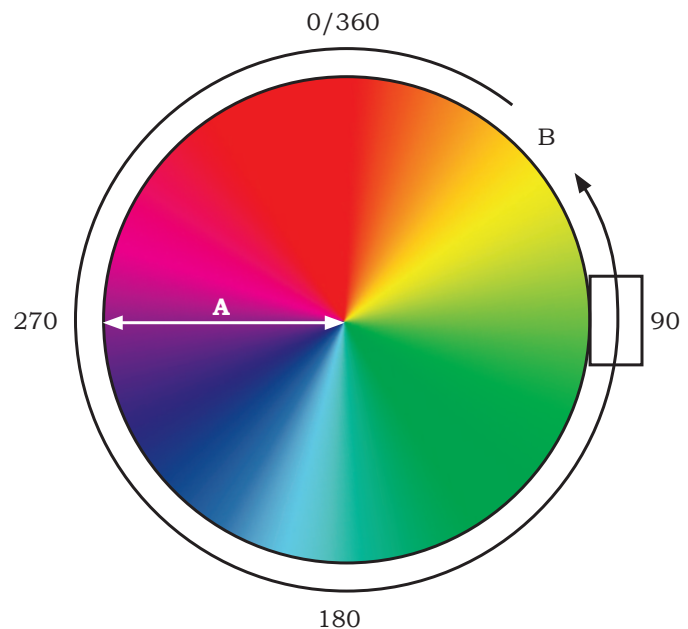


Fig. 3.50: Hue and Saturation points in colour wheel, where A is Saturation and B is Hue

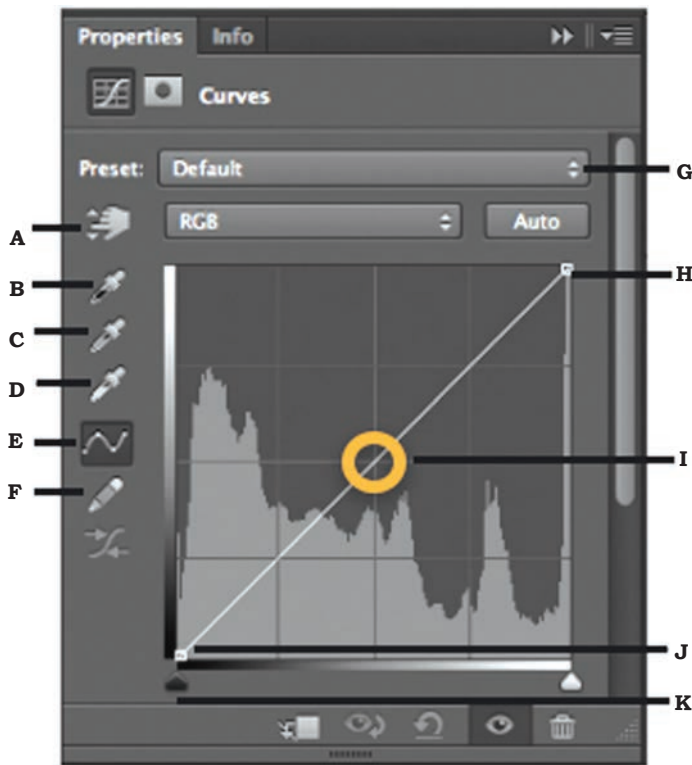


Fig. 3.51: Curves options in properties panel —
 A. On-image adjustment tool; B. Sample in image to set black point; C. Sample in image to set gray point; D. Sample in image to set white point; E. Edit points to modify the curve; F. Draw to modify the curve; G. Curves preset menu; H. Set black point; I. Set gray point; J. Set white point; K. Show clipping.

Curves adjustment

In the Curves adjustment, you adjust points throughout an image's tonal range. You can see the curves adjustment dialog box when you choose Layer > New Adjustment Layer > Curves (Figure 3.51).


The standard curve is actually a straight line running diagonally across the grid from the bottom left to the top right of the chart. This straight line, by default, means 'no adjustment at all'. The horizontal axis of the graph represents the input levels (original image values), and the vertical axis represents the output levels (new adjusted values).

When adjusting an RGB image, the upper-right area of the graph represents the highlights and the lower-left area represents the shadows. One can adjust the Curve line in a couple of ways.

One option is to click and drag on the line in an upward or downward direction to adjust the pixels of that tone in the photo. Another adjustment that you can perform using this technique is to drag the line into what is referred to as a shallow S-curve.

As you add control points to the line and move them, the shape of the curve changes, reflecting your image adjustments. The steeper sections of the curve represent areas of higher contrast while flatter sections represent areas of lower contrast. The Curves adjustment can also be applied to CMYK, Lab colour, or Grayscale images.

Adjust Image colour and Tone with Curves

- Open the 'Colour and Tone' dialog box and apply the 'Curves'  command.
- A dialog box will appear allowing you to adjust the image tone by editing the graph.

- Moving a point in the— (a) top portion of the curve adjusts the highlights, (b) centre of the curve adjusts the midtones, and (c) bottom section of the curve adjusts the shadows.
- To darken highlights, move a point near the top of the curve downward.
- Moving a point either down or to the right maps the Input value to a lower Output value, and the image darkens.
- To lighten the shadows, move a point near the bottom of the curve upward.
- Moving a point either up or to the left maps a lower Input value to a higher Output value, and the image becomes light (Figure 3.52).
- Click 'OK' to apply the correction.

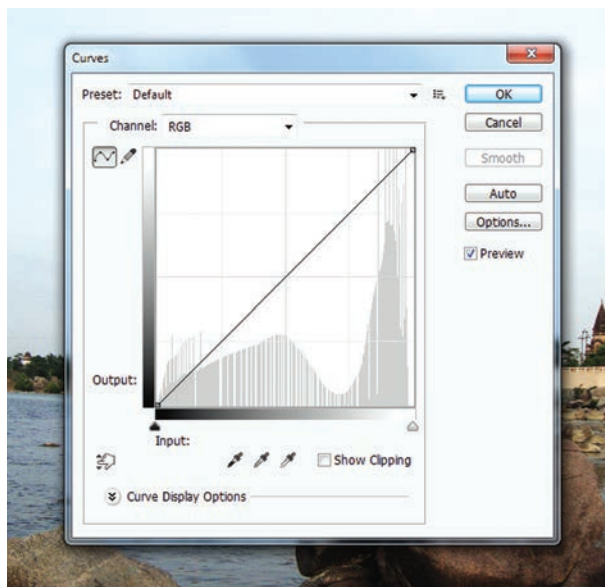


Fig. 3.52: Curves adjustments



Fig. 3.53: A view of colour balance window

Colour balance

The 'colour balance' command changes the overall mixture of colours in an image for generalised colour correction (Figure 3.53). The logic of this tool is based on RGB colour model.

For colour balancing, click on the Colour Balance icon in the Adjustments panel.

Choose Layer > New Adjustment Layer > Colour Balance.

Practical Exercises

Activity 1

Creating a digital graphics with Colour Balance Adjustment.

Material required

Computer, Adobe Photoshop software

Procedure

- Step 1:** Open a blank canvas of size 800 × 600 pixels, Resolution: 150 pixels per inch, and white background.
- Step 2:** Import a colour photo (of a scene or portrait photo).
- Step 3:** Go to Image > Adjustments > Colour Balance
- Step 4:** Make sure that the composite channel is selected in the channels panel. This command is available only when you are viewing the composite channel.
- Step 5:** Do one of the following:
- Click on the Colour Balance icon in the Adjustments panel.
 - Choose Layer > New Adjustment Layer > Colour Balance.
 - One can also choose Image > Adjustments > Colour Balance. However, one must keep in mind that this method makes direct adjustments to the image layer and discards image information.
 - In the Properties panel, select Shadows, Midtones, or Highlights to select the tonal range in which the user wants to focus the changes. Select Preserve Luminosity to prevent changing the luminosity values in the image while changing the colour. This option maintains the tonal balance in the image. Drag a slider towards a colour that the user wants to increase in the image; drag the slider away from the colour that you want to decrease in the image. The values above the colour bars show the colour changes for red, green and blue channels (For Lab images, the values are for the A and B channels.) Values can range from -100 to +100.
- Step 6:** Select OK and save the output to JPG file format and the original PSD File. View this developed JPG file in Windows photo viewer software.

Activity 2

Creating a digital graphics with partial grey colour and partial RGB colour.

Material required

Adobe Photoshop Software



Procedure

- Step 1:** Open a blank canvas of size 800 × 600 pixels, Resolution: 150 pixels per inch and White Background.
- Step 2:** Import a colour photo (of a scene or portrait)
- Step 3:** Select a portion of this image using the Selection tool.
- Step 4:** Go to Image > Adjustments > Select Hue or Saturation
- Step 5:** Reduce the Saturation Control Slider to -100.
- Step 6:** Deselect the de-saturated portion of the image and save the output to JPG file format and the Original PSD File. View this developed JPG file in Windows Photo Viewer Software.

Check Your Progress**A. Fill in the Blanks**

1. The _____ command in Adobe Photoshop enables you to adjust the colours in your image, based on their hue.
2. The colour _____ command changes the overall mixture of colours.
3. When adjusting an RGB image, the upper-right area of the graph represents the highlights and the lower-left area represents the _____.

B. Subjective Questions

1. Describe the functions of the following combination of keys:
 - (a) Ctrl + m
 - (b) Ctrl + u
 - (c) Ctrl + l
 - (d) Ctrl + b
 - (e) Ctrl + z

What Have You Learnt?**On completion of this session, you will be able to:**

- demonstrate the use of different correction tools for image preparation;
- adjust the brightness, contrast and saturation of the image.

SESSION 6: DIGITAL MATTE PAINTING

Digital painting is a method of doing an artwork on a system. It is a way of portraying our ideas and thoughts on the screen by adapting traditional painting mediums



like oil, ink, water colour, etc. Photoshop produces raster paintings. These paintings usually resembles a real painting made with real brushes and paint, thus they look more realistic than a vector painting or illustration. A digital painting maker tries to mimic the physical objects or people in their own virtual manner using virtual brushes and colours. Making use of photo textures can be a great way to enhance our artwork in Adobe Photoshop and make it look more realistic. Photo textures are actually a part of pictures and photographs and we can use them to add texture to our artwork using blending modes. Texture brushes can be used to add realistic details in our artwork. Also we can make our own brushes and can also find the brushes online.

Matte Painting

Matte painting is a creative technique that filmmakers use to create backgrounds for scenes that cannot or do not exist in real life. It is an old technique in the visual effects industry. It is a painted representation of a large landscape that allows filmmakers to create the illusion of an environment that does not exist. It combines several techniques including 3D, photo manipulation, painting as well as retouching techniques in order to achieve quality result. Mattes are used to combine foreground image with the background image. The output depends on the skill level of the artists and technicians involved in matte painting.



Fig. 3.54: Step 1 for creating Digital Matte Painting
(<https://www.digitalartsonline.co.uk/tutorials/photoshop/fantasy-digital-matte-painting/?pn=2>).

Steps for creating Digital Matte Painting

Before starting the matte painting scene, make a rough sketch of the world that you would like to create. You can refer to some images that could help you in your matte painting for colour correction and for the Depth of Field (DoF). You also need to decide the size of your painting. The range of the painting's dimensions would depend on its intended use.



Step 1

- Open a new document by going to File > New and create a blank canvas of 5,700 × 3,900 pixels.
- Click and drag the photograph into the new document. Place the photo in the centre of the canvas, and then move it to the bottom right.
- Search the photo of Machu Pichhu using Google Image search and download the same (Figure 3.54).

Step 2

- Use the Photoshop Eraser tool to remove the photograph's sky area and then create a new layer named 'Outlines' above the photograph. We will now start extending the original plate.
- Select a soft standard brush of about 30 pixels and start drawing in the general outline of the new scenery that the user is going to add.

Step 3

- Now that we have the general outlines of our new image, we can start painting in a bit more detail.
- Always begin with the element that is the furthest (usually, sky).
- Select the 'Background' layer and create a new layer named 'Sky'. While still in brush mode, hold down Alt key to turn the cursor into a colour eyedropper and select the grey/blue colour of the background mountains in the photograph.
- Now, use this colour to block in the sky (Figure 3.56).

Step 4

- Add some storm clouds to the sky and establish the light source. Use a variety of different sized soft brushes and light



Fig. 3.55: Step 2 for creating digital Matte Painting



Fig. 3.56: Step 3 for creating Digital Matte Painting



Fig. 3.57: Step 4 for creating Digital Matte Painting



Fig. 3.58: Step 5 for creating Digital Matte Painting



Fig. 3.59: Step 6 for creating Digital Matte Painting



Fig. 3.60: Step 7 for creating Digital Matte Painting

pen pressure to slowly build up the layers of stormy clouds. Also, add the sunbeam to give a more realistic look (Figure 3.57).

Step 5

- Ensure the 'Sky' layer is still selected and create a new layer called 'Right mountain'.
- Use the same technique that you used for creating the sky. This can be done by picking the colour of the right-hand mountain on the photograph and then blocking in that colour on your extension (Figure 3.58).
- Add few more details to the mountain by picking various shades from the original photograph by applying it to your new layer.
- The sky and landscape extensions are all your imagination, but you can also use reference photographs.

Step 6

- Select 'Layer 1' (the layer that is the original photograph), and now create a new layer named 'Right Foreground Mountain' (Figure 3.59).
- Repeat Step 6, but add little more detail. Use the original photograph as the colour palette in order to keep a uniform and balanced colour scheme all along the picture.

Step 7

- Now, create a new layer and name it 'Left Foreground Mountain'.
- Paint rough details as in the previous step.
- Once done, select 'Layer 1' again and create a new layer named 'Middle-Ground' (Figure 3.60).

Step 8

- We will now add the final creations over the original plate, which includes the waterfall and another small peak towards the background of the ruins.
- Once done, delete the 'Outlines' layer. The rough layout must look similar to the screen capture. This sketch will give a strong feel of what exactly the final composition will look like, displaying the elements, such as colour, lighting and perspective view.
- In the next step, we will start to render our matte in more detail and try to give the painted area more of a photo-realistic look (Figure 3.61).

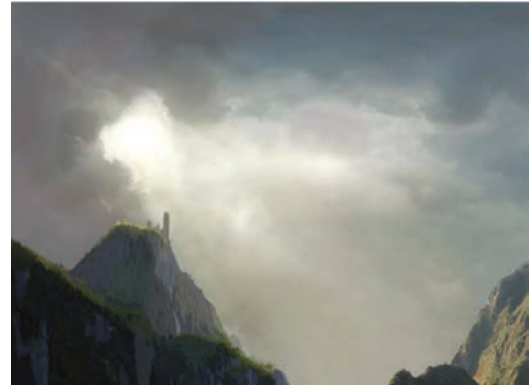


Fig. 3.61: Step 8 for creating Digital Matte Painting

Step 9

- We will start with the sky again. Select the 'Sky' layer and with a variety of different sized brushes, build up the layers of cloud. One can always find a large-sized photograph and paste it in, retouching it a bit with some brushwork (Figure 3.62).
- Make use of adjustment layers and colour overlays placed over your sky layer, to view changes without affecting your working layer.



Fig. 3.62: Step 9 for creating digital Matte Painting

Step 10

- Now, we have painted in some distant mountains beneath the sky to give the painting more depth. They are just flat colour silhouettes with some highlights added to the edges (Figure 3.63).
- Once the sky is done, go to Filter > Noise > Add Noise and add a bit of Gaussian Noise to help it match the 'film' grain of the original plate.



Fig. 3.63: Step 10 for creating digital Matte Painting

Practical Exercises

Activity 1

Cropping and cleaning images

Material required

Computer, Adobe Photoshop software

Procedure

- Select an image, for example rocks, trees, houses of high sharpness and detailed quality (to be used later as foreground image in Matte Painting).
- Crop and clean the image, in accordance with the requirement of a large Matte Painting scene.
- Select the second image, for example ocean coast, river bank, forest with lesser sharpness, or detail to act as mid-ground image of a large Matte Painting scene.
- Crop and clean the image, in accordance with the requirement of a large Matte Painting scene.

Activity 2

Mixing foreground and background image for a matte painting

Material required

Computer, Adobe Photoshop software

Procedure

Create a single Matte Painting scene of size 1920 × 1080 pixels, Colour Mode: RGB, Resolution: 150 pixels/inch, by using masking and mixing tools of Adobe Photoshop to create:

- Foreground image (with full detail and sharpness)
- Import and mix the mid-ground image (with lesser detail and sharpness) and place it behind the foreground image.
- Now, import the background image in this same mixed single Matte Painting file and mix it with the third image, which is almost a blurred image like blue or evening sky or out-of-focus background like a mountain range, sea or ocean water or large river water).

Activity 3

Given below are certain steps for digital Matte Painting. Arrange them in sequence.

1. Use the photoshop eraser tool to remove the photograph's sky, and then, create a new layer.
2. Add some storm clouds to the sky and establish the light source. One can use a variety of different sized soft brushes.



3. Ensure that the sky layer is still selected and create a new layer called 'right mountain'.
4. One can create a new layer and name it 'left foreground mountain'. Paint in the rough details as in the previous step.
5. Select 'Layer 1' (the layer that is the original photograph) and create a new layer, which can be named 'right foreground mountain'.
6. Open a new document by Group to File > New and create a blank canvas of 5700 × 3900 pixels.
7. Now, we have the general outline of our new image and we can start painting in more detail. Always begin with the element that is the furthest (usually, the sky).

Check Your Progress

A. Fill in the Blanks

1. A painted representation of a landscape or distant location that allows a filmmaker to create the illusion of an environment that is not present at the filming location is known as _____ painting.
2. _____ paintings made through the Adobe Photoshop usually resemble a real painting made with real brushes and paint and they look more realistic than a vector painting or illustration.

B. Subjective Questions

1. What is 'matte painting'?
2. Describe the steps of matte painting in Adobe Photoshop.

SESSION 7: FRAME COMPOSITION

Frame composition is a guideline, which can be applied in many situations to enhance the impact of a scene. These guidelines will help the students to take more compelling photographs, lending them a natural balance, focusing attention to the important parts of the scene, or leading the viewer's point of view.

Once familiar with these composition tips, one will be surprised at how universal these compositions are. One can identify them everywhere and find it easy to see why some photos look more attractive while others look like simple snapshots.



NOTES

Rule of Thirds

Rule of Thirds is not any rule, but a guideline intended to help when the user is uncertain regarding the placement of elements in a scene, or when the user is framing the picture. As we have studied about the Rule of Thirds in Chapter 2, the whole image is divided into nine equal segments by two vertical and two horizontal lines. It implies that one must position the most important elements in a photo or scene along these lines, or at points where they intersect. By doing so, it will add balance to the photo (Figure 3.64).



Fig. 3.64: A view explaining how the temple and horizon are aligned along the lines in Rule of Thirds

Balancing Elements

Photographs contain one or more subjects. Placing your main subject off-center, as with the rule of thirds, creates a more interesting photo. However, it can leave a void in the scene which can make it feel empty. Therefore, you should balance the 'weight' of your subject by including another object of lesser importance to fill this space. This is called as balance in photography. There are two types of balance in photography: (i) formal balance, also called symmetrical balance, the one in which images are repeated symmetrically on each side of a given point, and (ii) informal balance, also called asymmetrical balance, the one in which one or more dissimilar elements are balanced on each side of a given point.

Leading Lines

When we look at a photo, our eyes are naturally drawn along lines. Lines in the composition can affect the way we see an image, pulling us into the picture or towards the subject in the scene. There are many different types of lines namely straight, diagonal, curvy, zigzag, radial, etc., and each can be used to enhance the composition of photo (Figure 3.65).



Fig. 3.65: Lines on the road in this photo draws one's eye through the scene with the single point vanishing view

Symmetry and Patterns

Symmetry refers to a sense of harmonious and beautiful proportion and balance. We are surrounded by different types of symmetries and patterns — both natural and man-made. These can be used to define and draw the focus of the viewer to the subject. They can be used as eye-catching compositions; particularly in situations where they are not expected (Figure 3.66).

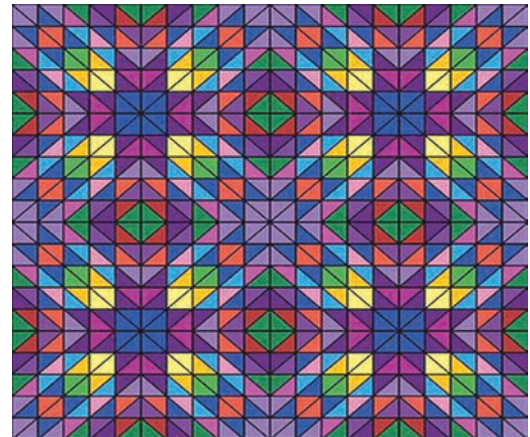


Fig. 3.66: A view of symmetry and patterns

Viewpoint

Before photographing the object or subject, take time to think about the location from where you will shoot. The photographer's viewpoint has immense impact on the composition of the photo clicked, and thus, can largely affect the message that the shot conveys. Instead of just shooting from the eye level, consider photographing from a height, at the ground level, at the side, back, far away,



Fig. 3.67: Viewpoint chosen here creates an interesting perspective



Fig. 3.68: Depth of a scene —Rock, Yacht, Boat and Ocean



Fig. 3.69: Framing



Fig. 3.70: Cropping

very close and so on. Changing the viewpoint is a great way to enhance a composition (Figure 3.67).

Depth

As you might be aware that photography is a 2D (two-dimensional) medium, we have to choose our composition carefully so as to convey the sense of depth as present in the actual scene. One can create depth in a photo by including distinct objects in the foreground, middle ground and background. Another useful composition technique is overlapping, where we deliberately partially obscure one object with another. The human eye naturally identifies these three layers and mentally separates them, creating an image with greater depth (Figure 3.68).


Framing

Framing in photography is the presentation of visual elements in an image, especially the placement of the subject in relation to other objects. It refers to using elements of a scene to create a frame within a frame. Adding a focal point through framing, shows the viewer exactly where to look (Figure 3.69).

Cropping

Cropping is the removal of unwanted outer areas from a photograph or an image. By cropping close to the subject, one can eliminate the background, ensuring the subject gets the viewer's attention (Figure 3.70).

Follow the given steps to crop an image:

- Select the Crop Tool  on the Toolbar.
- Select an area of the image to retain (just the same as making a normal selection).
- When you release the mouse button, the area to be retained is highlighted.
- You can move or transform the crop area by dragging the selection or the selection handles.
- Press Enter key to perform the crop.
- You can combine cropping and resizing in the same operation, using the options in options bar.

Experimentation

Photography is a creative and most expressive art form. Experimentation in photography is often described as using alternative techniques to photograph a subject. A photographer who does experimental photography uses techniques that are not common with the usual photography or digital photography. The most common experimental photography is photomontage (Figure 3.71). This technique involves the act of combining pieces of photographs and using different types of graphic materials. Another form is performance art photography, which combines photography and performance art (Figure 3.72).



Fig. 3.71: Photomontage



Fig. 3.72: Performance Art Photography

Practical Exercises

Activity 1

Taking photographs from different viewpoints

Material required

DSLR Camera

Procedure

- You can change your elevation. Kneel down and take a photo or hold the camera above your head and shoot down on your subject.
- You can move right or left while clicking the subject.
- You can go aside your subject or behind them or even get closer or further away.
- You can at times roll diagonally from right or left.
- Notice how the background shifts and the viewpoint changes.
- You will notice that changes in viewpoint can add a deeper meaning or feeling to an image.

Activity 2

Creating compositions from different angles

Material required

Computer, Adobe Photoshop software

Procedure

- Create a digital graphic with a blank canvas of size 800 × 600 pixels, Resolution: 150 pixels/ inch, white background and RGB default colour mode.
- Import one digital photograph, resize by scaling it and creating a new composition from wide angle shot to mid-shot, thereby forming a new composition.
- Save the file in JPG format to compare it with its previous composition.

Activity 3

Applying Rule of Thirds to an image

Material required

Computer, Adobe Photoshop software

Procedure

- Create a digital graphics with a blank canvas of size 800 × 600 pixels, resolution: 150 pixels/inch, white background and RGB default colour mode.



- Import a digital photograph with a landscape and sky or any other image of your choice.
- Use the Rule of Thirds and create a new composition.
- Save the file in JPG format.

Check Your Progress

A. Fill in the blanks

1. Rule of Thirds is not any rule, but it is a guideline intended to help you when you are uncertain as to the placement of elements in a _____ or when you are framing the picture.
2. In Rule of Thirds, the whole image is divided into _____ equal segments by two vertical and two horizontal lines.
3. The two types of balance in photography are _____ balance and informal balance.
4. Informal balance, also called as _____ balance is the one in which one or more dissimilar elements are balancing on each side of a given point.
5. Symmetry refers to a sense of harmonious and beautiful proportion and _____.
6. Cropping is the removal of _____ outer areas from a photograph or an image.
7. Photomontage is the technique that involves the act of combining pieces of photographs and using different types of _____ materials.

B. Subjective Questions

1. Write short notes on the following:
 - (a) Rule of thirds
 - (b) Symmetry and patterns
 - (c) Leading lines

What have you learnt?

On completion of this Session, you will be able to:

- describe the rule of thirds and its applications;
- differentiate between the formal and informal balancing in photography;
- explain the meaning and purpose of viewpoint, symmetry, depth and framing in photography; and
- crop an image in Photoshop using Crop Tool.

